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Terence E. Hays

Rhode Island College, thays@ric.edu

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USES OF WILD PLANTS IN NDUMBA,
EASTERN HIGHLANDS PROVINCE

By

Terence E. Hays

Department of Anthropology and Geography
Rhode Island College
Providence, R.I., U.S.A.

For Papua New Guineans, as well as for those who wish to understand them better, traditional knowledge of the local natural environment is a priceless resource. In the face of increasing commitments to a cash economy, however, many communities are rapidly losing their awareness and appreciation of the rich animal and plant worlds which are immediately available to them. As Powell has recently observed (1976), the recorded information regarding traditional plant knowledge and uses has tended to be widely-scattered in the literature and relatively difficult to access, especially for those who stand to benefit the most from it. A recent series of ethnobotanical papers in the pages of Science in New Guinea (e.g., Holdsworth and Giheno 1975, Powell 1976) represents an important change in this past situation, and the present paper is intended as a similar contribution.

In 1971-72, Patricia Hurley Hays and I conducted ethnographic and ethnobotanical research in Ndumba, a Tairora-speaking community about 45 km SSE of Kainantu and 23 km SSE of Obura in the Eastern Highlands Province. My focus was on plant knowledge and classification, and some of the results are now available (Hays 1974, 1979). Here I wish to report some of the information I obtained regarding uses of wild plants in the Ndumba region. Cultivated plants will be dealt with in forthcoming papers, as will comparative data in a review of the entire literature on plant uses in the New Guinea Highlands, a work now in progress.

At the time of our field research, Ndumba were only beginning to realize the economic rewards of cash-cropping (coffee), and were still heavily dependent upon their local resources for food, clothing, medicines, construction materials, and numerous other purposes. While

individuals varied in their knowledge and views of their environment, all Ndumba adults possessed remarkably detailed knowledge of and familiarity with their plant world. The territory they claim is extensive and varied, totalling 60 km² of land (for a population of about 350) and ranging from grassland at 1600 m, through their hamlets at 1900 m, to several types of forest reaching to the summit of Mt Piora at 3462 m. While their staple foods are sweet potatoes and the usual Highlands complements of yams, taro, sugar cane, bananas, and other garden crops, Ndumba know their undomesticated plants well and use them extensively.

I report here the uses which were widely agreed upon by my consultants for the wild plants I collected in the process of my research. Restricting my attention to the 517 collections for which I received determinations by botanists (and which are all housed in the Herbarium in Lae under the voucher numbers provided here), at least 133 species are included in the present discussion, listed alphabetically by genus. My information on uses is, I believe, fairly complete, but for the sake of brevity I have adopted a few conventions which should be mentioned. With regard to trees and large shrubs, Ndumba will use almost any source of firewood, depending on circumstances. Except in a very few cases, I have not included "firewood" in my report of uses below, but it should be assumed wherever reasonable. In their hunting and trapping pursuits, Ndumba men are aware of a great number of plants the fruits or other parts of which are eaten by birds and other game animals, and they set their traps or construct their hides accordingly. However, since there are so few trees and fruiting shrubs which are not "used" in this sense, I have not explicitly noted this point for most of the plants listed below. Finally, many timber sources are used to brace or support climbing beans and yams and growing sugar cane (and sometimes bananas); I have abbreviated this to "support poles" below.

I am indebted to a large number of people for their various contributions to my research. First, I must acknowledge the hospitality, patience, and assistance of the people of Ndumba in the face of my countless and unfamiliar inquiries. Especially helpful was Kwaa'keso, who became an excellent field assistant as well as consultant. Numerous administrators, members of the Summer Institute of Linguistics (particularly, Alex and Lois Vincent), and the staff of the Swiss Evangelical Brotherhood Mission at Obura and To'okena provided invaluable assistance and friendship. Many academic colleagues, especially Brent Berlin, Ralph Bulmer, Harold Coklin, Eugene Hunn, and James Watson, have been continually constructive critics of my work. For botanical determinations, I am deeply indebted to the staff at the Division of Botany in Lae and their director at the time of the field-work, Mr. John S. Womersley. Financial support and the necessary time for analysis and writing have come from the (U.S.) National Institutes of Health and a sabbatical leave granted by Rhode Island College. Valuable comments on an earlier draft of this paper were offered by two anonymous reviewers, Peter F. Stevens, and John S. Womersley; I am grateful to all four of them. Finally, my wife, Patricia Hurley Hays, has been indispensable in ways too numerous to list.

Acalypha sp. Fam. Euphorbiaceae
 Ref. T.E. Hays 403 Ndumba name: Fi'iaaru
 A small shrub, fairly common in grassland and old garden areas. The timber is used for fencing material, house ridgepoles, and support poles
Alphitonia incana (Roxb.) Teys & Binn. ex Kurz

Fam. Rhamnaceae
 Ref. T.E. Hays 229 Ndumba name: Taa've
 A small tree (8 m), growing along lower streambanks. The timber is used for fencing material, house posts, house rafters, bridges, and support poles.

Alpinia spp. Fam. Zingiberaceae
 Ref. T.E. Hays 134, 174, 287, 327, 415
 Ndumba name: Heng'gunru
 Wild gingers; perennial herbs with leafy shoots up to 3 m tall, growing (usually in clumps) at fringe of or within disturbed forest up to 2000 m.

Ndumba distinguish several types, the leaves of which are used for rain protection, to line earth ovens, and to wrap food for cooking in ovens.

Alyxia lamii Mgf. Fam. Apocynaceae
 Ref. T.E. Hays 222 Ndumba name: Daa'mera
 A shrub up to 2 m tall, growing along lower streambanks. The timber is used for support poles.

Araucaria cunninghamii D. Don. Fam. Araucariaceae
 Ref. T.E. Hays 408 Ndumba name: Saa'vara
 A tree, up to 40 m tall, forming dense stands along river at lower limits of Ndumba territory (1600 m). The timber is used for bridges, house posts, and house doors; suitable branches are used to make the beater for bark cloth; the bark is used as lashing material; edible grubs are sought under the bark, and beehives within holes.

Ardisia sp. Fam. Myrsinaceae
 Ref. T.E. Hays 434 Ndumba name: Saa'vevatau'taura
 A shrub, 2 m tall, in disturbed ridge forest at 2100 m. The timber is used for fencing material and traps.

Arthraxon ciliaris P. Beauv. Fam. Gramineae
 Ref. T.E. Hays 312 Ndumba name: Mmu'tate

A grass, common near hamlets.
 Rats and mice are said to make their houses from this grass, an important clue during communal rodent hunts at funerals.

Asplenium sp. Fam. Aspleniaceae
 Ref. T.E. Hays 384 Ndumba name: Min'do
 An epiphytic fern, on tree trunks at edge of lower forest. Traditionally, ash salt was made from the fronds, mixed with water, and drunk.

Astronia sp. Fam. Melastomataceae
 Ref. T.E. Hays 438 Ndumba name: Haa'unraanda
 A small tree, 5 m tall, in ridge forest at 2000 m. The timber is used for support poles, and branches for traps.

Begonia sp. Fam. Begoniaceae
 Ref. T.E. Hays 015, 040 Ndumba name: Kim'buenranra
 A shrub, up to 2 m tall, along streambanks in disturbed forest. Flowers and leaves are used as personal ornamentation in ceremonies.

Begonia sp. Fam. Begoniaceae
 Ref. T.E. Hays 084, 429, 440 Ndumba Name: Naam'bufua'raara
 A herb, abundant in clumps at edge of and within lower ridge forest. Women eat the leaves ceremonially at rite of first menstruation.

Begonia sp. Fam. Begoniaceae
 Ref. T.E. Hays 334 Ndumba name: Fe'vaka
 A vine, running along branches of small trees in ridge forest. Leaves are eaten by all against chills and fever; men eat the leaves ceremonially in a curing rite for sick children.

Bubbia sp. Fam. Winteraceae
 Ref. T.E. Hays 465 Ndumba name: Nraamma'saasira
 A ridge forest tree, up to 10 m tall. This tree is never felled; reportedly, the breasts of the woodsman's mother or wife would swell and "die".

Buchnera tomentosa L.Fam. Scrophulariaceae

Ref. T.E. Hays 057

Ndumba name: 'Iatai'para

A small herb, in grassland near hamlets.
Leaves are placed on sores or cuts, or chewed and spit on such.

Calycacanthus magnusianus K. Sch.Fam. Acanthaceae

Ref. T.E. Hays 460

Ndumba name: Rova'ara

A shrub, common in old garden regrowth.
Flowers are used as personal ornamentation in ceremonies.

Carpodetus arboreus (Laut. & K. Sch.) SchltrFam. Saxifragaceae

Ref. T.E. Hays 270

Ndumba name: Po'nraunra

A tree, 7-8 m tall, amidst dense cane on streambanks.
The timber is used for bridges, house-building, and support poles;
suitable branches are used in making blunt heads of bird arrows.

Cassia floribunda Cav.Fam. Leguminosae

Ref. T.E. Hays 101

Ndumba name: Waa'o'a

A recently-introduced large shrub, now wild in grassland near hamlets
and planted in hamlets.
Bright yellow flowers and leaves are used for personal ornamentation.

Castanopsis acuminatissima (Bl.) Hickel & CamusFam. Fagaceae

Ref. T.E. Hays 304, 455

Ndumba name: Honrimma

A tree, 10-14 m tall, common in stands along streambanks at 2000 m.
In housing, the timber is used for posts, ceiling poles, center posts
for traditional round houses, and floor poles dividing men's and women's
sections of women's houses. The timber is also used for fencing
material, bridges, stone adze and steel axe handles, bull-roarers
(for men's ceremonies), and support poles. Children eat the
"chestnuts", the tree is said to be the best source of edible grubs
under the bark, beehives are sought in holes, and the reportedly best
place to find the choicest edible mushrooms is at the base of this tree
(as is also reported in Europe).

Casuarina oligodon L.S. Johnston in ed.Fam. Casuarinaceae

Ref. T.E. Hays 215

Ndumba name: 'Aa'nrempa

A tree, to 14 m tall, occasionally found wild in grassland but more
commonly planted when abandoning a garden to fallow. The tree is said
to replenish the fertility of soil in gardens and is planted for this
purpose; its maturity is taken as a signal for recultivation. The
timber is used for most fence palings, bridges, and support poles.
Young boys' bows are made from branches, beehives are sought in holes,
and it is a common source of firewood.

Casuarina papuana S. MooreFam. Casuarinaceae

Ref. T.E. Hays 259

Ndumba name: Taaza

A tree reaching 10 m, wild in grassland and old garden regrowth, but
sometimes cultivated.
The timber is used for bridges and support poles. Hunters seek
lizards at its base and other game in the branches.

Clematis phanerophlebia Merr. & PerryFam. Ranunculaceae

Ref. T.E. Hays 437

Ndumba name: Kaapi'kana

A very long vine, entwined around various trees in ridge forest. The
stem provides lashing material for house construction, fences, bridges,
roof thatch, firewood bundles, and sugar cane.

Coelogyne sp.Fam. Orchidaceae

Ref. T.E. Hays 409

Ndumba name: Kwaza'kwaza

An epiphytic orchid, on tree branches along lower river banks. The
flower is used for personal ornamentation.

Coix lachryma-jobi L.Fam. Gramineae

Ref. T.E. Hays 219

Ndumba name: Kung'gura

"Job's tears" is fairly common along streambanks. Ndumba distinguish
two varieties; with both, the silvery-grey "fruits" are threaded as
necklaces for personal ornamentation.

Coleus scutellarioides (L.) Benth.Fam. Labiatae

Ref. T.E. Hays 026, 152, 244

Ndumba name: Nrummau'unra

Coleus occurs in several forms, most of which are cultivated. This
form is a small shrub, common along lower streambanks and near hamlets.
The stem is purple and exudes purple liquid when cut. The leaves are
heated over fires and the smoke inhaled as medicine. The strong-
smelling flowers are placed against the nose of a dog or a person to
induce vomiting. The leaves are stuffed into armbands as a "good-
smelling" ornament.

Cyathea sp.Fam. Cyatheaceae

Ref. T.E. Hays 354, 355

Ndumba name: Taa'pu'a

A tree fern c. 2 m tall, common in high ridge forest at 2800 m. Fronds are used in making hides for hunting.

Cyathea sp.Fam. Cyatheaceae

Ref. T.E. Hays 371

Ndumba name: Tovenra

A tree fern, up to 5 m tall, most common amidst grass and cane near hamlets. The fronds are cooked with pork in earth ovens and eaten. Part of the trunk is used as an ornament on top of the center-protruding pole of men's houses.

Cyclosorus sp.Fam. Thelypteridaceae

Ref. T.E. Hays 382

Ndumba name: Hivi'hivi

A fern, growing in clumps up to 2 m tall in old garden regrowth. This fern is transplanted to gardens on slopes where landslips are likely; its extensive root system is said to check erosion.

Cyperus spp.Fam. Cyperaceae

Ref. T.E. Hays 086, 119, 321

Ndumba name: Saa'koko

A common sedge in garden fallows and lower forest. The rough-edged leaves are used for nose-bleeding rites at male initiation and women's first menstruation.

Dendrobium lobbii Teys & Binn.Fam. Orchidaceae

Ref. T.E. Hays 347, 348

Ndumba name: Tevora

An epiphytic orchid on tree trunks in ridge forest at 2800 m. The long, bright yellow stem is used for ornamentation at festivals or fashioned into necklaces.

Dendrobium sp.Fam. Orchidaceae

Ref. T.E. Hays 400

Ndumba name: Bim'bira

A terrestrial orchid, up to 1 m tall, growing amidst grass and cane. The flower may be used for personal ornamentation.

Dendrobium sp.Fam. Orchidaceae

Ref. T.E. Hays 122, 362

Ndumba name: Duvaari

An epiphytic orchid, commonly on mossy boulders on streambanks or tree trunks in ridge forest from 2100-2400 m. The orange or purple flowers are used for personal ornamentation.

Dendrobium sp.Fam. Orchidaceae

Ref. T.E. Hays 244, 308, 353

Ndumba name: Fing'gungga

An epiphytic orchid, on mossy boulders on streambanks at 2000 m or on ridge forest tree trunks up to 2800 m. The leaf and stem are a special ornament for boys undergoing initiation, or a common ornament for women at infant feasts.

Dendrobium sp.Fam. Orchidaceae

Ref. T.E. Hays 425

Ndumba name: Haava'risa

An epiphytic orchid on tree branches in ridge forest at 2400 m. The long, bright yellow stem is used to decorate arrows and various ritual objects; traditionally it was also used as a decoration for men's cane waistbands.

Dendrobium sp.Fam. Orchidaceae

Ref. T.E. Hays 509

Ndumba name: Kaambaara'hotera

An epiphytic orchid on tree branches on streambanks at 1900 m. The purple flowers are used as personal ornamentation.

Dendrobium sp.Fam. Orchidaceae

Ref. T.E. Hays 340

Ndumba name: 'Ora'hotera

An epiphytic orchid on tree trunks, common in ridge forest at 2500-2700 m. The orange flowers are used as personal ornamentation.

Derris sp.Fam. Leguminosae

Ref. T.E. Hays 505

Ndumba name: Haari'sora

A shrub, up to 4 m tall, along streambanks. The bark is used to make lashing material for bridges, fences, and sugar cane.

Dichrotrichum sp.Fam. Gesneriaceae

Ref. T.E. Hays 001

Ndumba name: Kuraara

A vine found on trunks of many different trees in lower forest. The deep orange flowers are a favored personal ornament. Men also place

the flower in their hair as a signal to others that they have just killed some game; women place the flower behind their ears to signal that they have caught rats or mice on communal hunts. It is said that all eat the leaf, flower, and seed with salt.

Dicliptera papuana Warb.

Fam. Acanthaceae

Ref. T.E. Hays 416, 500 Ndumba name: Haari'aanrosa

A small herb, growing in clumps in fallow gardens or garden regrowth. The leaf is eaten by all.

Dicrocephala bicolor (Roth.) Schlechtend.

Fam. Compositae

Ref. T.E. Hays 515 Ndumba name: Maata'kusanranra

A herb, up to 1 m tall, growing along lower streambanks. Children eat the leaf with salt.

Dimorphanthera spp.

Fam. Ericaceae

Ref. T.E. Hays 221, 345, 428 Ndumba name: Kenda'vara

Several forms of vine, growing on trunks or branches of various trees at edge of ridge forest, or a shrub, up to 2.5 m tall, in ridge forest, from 1900-2700 m.

The stem provides lashing material for fences and houses.

Diplazium sp.

Fam. Athyriaceae

Ref. T.E. Hays 323, 379 Ndumba name: Kaandiri

A fern, up to 2 m tall, common in old garden regrowth and secondary vegetation near hamlets from 1800-2000 m.

All eat the leaf and new shoots (but forbidden to men during their wives' pregnancies and early post-partum period).

Dodonaea viscosa (L.) Jacq.

Fam. Sapindaceae

Ref. T.E. Hays 225 Ndumba name: Mmunri

A tree, 6-7 m tall, common in garden regrowth. The timber is used for housing material, fencing, traps and support poles.

Elaeocarpus rubigenus Schltr.

Fam. Elaeocarpaceae

Ref. T.E. Hays 216 Ndumba name: Hu'revu

A tree, common along streambanks at 1900 m. The timber is used for housing material, fencing, and bridges.

Elatostema sp.

Fam. Urticaceae

Ref. T.E. Hays 039 Ndumba name: Merura

A herb, growing in clumps on streambanks in disturbed lower forest at 2300 m; often it is transplanted to the forest edge. Women use the leaves as personal ornamentation; all eat the leaves as medicine.

Elatostema sp.

Fam. Urticaceae

Ref. T.E. Hays 467 Ndumba name: Nronggaariaara

A herb, found on ridge forest floor at 2100 m. All eat the leaves as medicine and at initiation ceremonies; the leaves are also fed to pigs, reportedly to increase their body fat.

Eugenia sp.

Fam. Myrtaceae

Ref. T.E. Hays 230 Ndumba name: Faahifaan'daura

A tree, 5 m tall, growing on streambanks at 1900 m. The timber is used for fencing, traps, housing material, and support poles. Children streak their faces with juice from the fruit as personal decoration.

Euphorbia buxoides A.R. Sm.

Fam. Euphorbiaceae

Ref. T.E. Hays 518 Ndumba name: Ti'saaru

A shrub, up to 1 m tall, sometimes wild in the grassland, but usually planted near houses.

The white, milky sap of the branches is used as gum for fastening bindings on arrows.

Evodia sp.

Fam. Rutaceae

Ref. T.E. Hays 373 Ndumba name: Faanravaa'sera

A small tree, up to 8 m tall, amidst grass and cane near hamlets. The timber is used for house posts, bridges, fencing, traps, and support poles.

Ficus adenosperma Miq.

Fam. Moraceae

Ref. T.E. Hays 419 Ndumba name: Hi'ru

A tree, up to 10 m tall, on river banks at 1700 m. The timber may be used as support poles.

Ficus augusta Corner

Fam. Moraceae

Ref. T.E. Hays 117 Ndumba name: Waa'ora

A large tree, up to 20 m tall, usually found on streambanks at 2000 m; it is often transplanted in the hamlets. The timber is used for house posts, bridges, fences, and support poles. Men build hides in the

branches for hunting, and edible grubs are sought under the bark. The bark itself is used by women to fasten firewood bundles, and by men as a foot-loop to aid in climbing trees. Women plant the leaves in gardens as magic for sweet potatoes. At marriage, a couple ritually eats the bark with taro.

Ficus calopilina Diels

Fam. Moraceae

Ref. T.E. Hays 107, 242

Ndumba name:

Ka'saasa

A smaller fig, growing up to 15 m on streambanks or in groves of *Casuarina* near hamlets.

As with several other figs, the timber is used for fencing, bridges, and support poles. Both the leaves and round fruits are planted as magic for sweet potatoes. Edible grubs are sought under the bark, and beehives in holes; the flying fox is believed to favor the fruit of this tree (as do birds and other game), so hunters often build hides in the branches. A sapling of this tree is ritually placed with several other plants in funeral shrines.

Ficus copiosa Steud.

Fam. Moraceae

Ref. T.E. Hays 450

Ndumba name:

Hepo

This small fig, c. 10 m tall, is found in the lower disturbed forest and transplanted to hamlets and nearby gardens. The timber is not used except as firewood. Beehives are sought in holes, and the flying fox is said to eat the fruit. All eat the leaves and fruit except for males 10-18 years old (to whom it is forbidden because of its "prickly leaves") and men whose wives are pregnant or in the early post-partum period.

Ficus dammaropsis Diels

Fam. Moraceae

Ref. T.E. Hays 372, 469

Ndumba name:

Kembora

One of the smaller fig trees, 8-12 m tall, common along streambanks and amidst secondary vegetation near hamlets at 2000 m. The bark is used by women to tie firewood bundles and by men as foot-loops for tree-climbing. Edible grubs are sought under the bark. The sap is said to be used by enemy sorcerers in other settlements to cause leprosy in Ndumba. All eat the deeply-furrowed leaves with salt, wrap pork in them for cooking in earth ovens, and wrap rats and mice in them for roasting or steam-cooking in bamboo tubes.

Ficus wassa Reinw.

Fam. Moraceae

Ref. T.E. Hays 303

Ndumba name:

Kwaa'te

Another small fig tree (c. 10 m), not uncommon along streambanks near hamlets. The timber is used for fencing, bridges, and support poles.

Ficus xylosyca Diels

Fam. Moraceae

Ref. T.E. Hays 392

Ndumba name: Kwaa'kesa

This large fig tree is found growing wild in the ridge forest at 2200 m and transplanted to the hamlets. Edible grubs are sought under the bark, and the bark is used for lashing material and as foot-loops for climbing trees. (It is not clear to me why the tree is important enough to be transplanted).

Galbulimima belgraveana (F. Muell.) Sprague

Fam. Himantandraceae

Ref. T.E. Hays 462

Ndumba name:

'Aan'dosa

A ridge forest tree, 20 m tall, found at 2100 m. All eat the red, ribbed, fleshy fruit; eating the fruit and bark together is said to induce temporary madness. The fruit is forbidden to a man when his wife is pregnant and during the early post-partum period. The timber may be used for fencing. Cassowaries are said to favor the fruit of this tree.

Garcinia sp.

Fam. Guttiferae

Ref. T.E. Hays 453

Ndumba name:

Hipiri

A small tree, seldom more than 7-8 tall, found along banks of streams near hamlets. Apart from firewood, the tree may be used for traps.

Gardenia lamingtonii F.M. Bail.

Fam. Rubiaceae

Ref. T.E. Hays 139

Ndumba name:

Raa'kema

A large tree (18 m) of the upper forest, found at 2200 m. The extremely hard timber is preferred for digging sticks, bridges, and fencing material.

Gleichenia cf. *erecta* C. Chr.

Fam. Gleicheniaceae

Ref. T.E. Hays 120

Ndumba name:

Fenra

A fern growing in large clumps, up to 1 m tall, not uncommon along paths in garden regrowth near hamlets. The stem is braided into rings which are then linked in chain-fashion and worn by new initiates as personal ornamentation; now the chains are also sold as wall decorations to nearby missionaries. The stem is also used for a decorative (and wound-aggravating) ring on arrows.

Glochidion sp.

Fam. Euphorbiaceae

Ref. T.E. Hays 133

Ndumba name: Nru'aahisa

A large tree, 15-20 m tall, in undisturbed forest at 2800 m. The timber is used for house posts and fences.

Graptophyllum sp.

Fam. Acanthaceae

Ref. T.E. Hays 048, 316

Ndumba name: Sorera

A shrub, less than 1 m tall, commonly found in disturbed forest from 2500-2700 m.
All eat the leaves.

Harpullia cf. *leptococca* Radlk.

Fam. Sapindaceae

Ref. T.E. Hays 167

Ndumba name: Sai'sova

A tall shrub, up to 2 m, inside fringe of lower forest at 2000 m. The timber is used for fencing, traps, and support poles.

Helichrysum bracteatum (Vent.) Andr.

Fam. Compositae

Ref. T.E. Hays 020

Ndumba name: Tepo'ara

A herb, common amidst cane near hamlets.
The bright yellow flower is a popular personal ornament.

Helicia sarawagedica Sleum.

Fam. Proteaceae

Ref. T.E. Hays 512

Ndumba name: Ko'kondamana

A woody shrub, up to 3 m tall, along streambanks at 1900 m. The timber is used for fencing and support poles.

Hornstedtia sp.

Fam. Zingiberaceae

Ref. T.E. Hays 457

Ndumba name: Hang'gaamunggora

A wild ginger, up to 4-5 m tall, along streambanks at 1900 m. The leaves are used for rain protection and to wrap bananas for cooking in earth ovens. All eat the seeds from the fruit.

Hornstedtia sp.

Fam. Zingiberaceae

Ref. T.E. Hays 106

Ndumba name: Sa'haahaa

A wild ginger, growing in clumps with leaves extending up to 2.5 m; found in marshy *Casuarina* groves near hamlets at 1800 m. The leaves are said to be too short for rain protection, but they are used to wrap food for cooking in earth ovens. All eat the seeds except men whose wives are pregnant or in the early post-partum period.

Imperata conferta (Presl) Ohwi

Fam. Gramineae

Ref. T.E. Hays 517

Ndumba name: Pi'tu

The dominant grass in many old garden areas at 2000 m. The leaves are used for roof thatch and bundled for torches.

Ipomoea sp.

Fam. Convolvulaceae

Ref. T.E. Hays 014

Ndumba name: Kaaro'hera

A vine, 3-4 m long, amidst dense cane in garden regrowth. The stem is used for lashing fences, bridges, and sugar cane. The flower is sometimes used for personal ornamentation.

Kibara sp.

Fam. Monimiaceae

Ref. T.E. Hays 155, 158

Ndumba name: Gena'pora

A shrub, 1-3 m tall, along streambanks in disturbed forest at 2000 m. The timber is used for support poles and to make bows for young boys.

Laportea decumana (Roxb.) Wedd.

Fam. Urticaceae

Ref. T.E. Hays 459

Ndumba name: Taa'ropa

Several types of stinging nettle shrubs are found commonly in secondary and disturbed primary forest. Ndumba distinguish a number of kinds, nearly all of which have the same uses. The leaves are used as a "tonic", rubbed on aching arms, legs, and backs. The leaves are also used in a number of ritual contexts, and especially strong leaves were traditionally used for disciplining boys in the men's house.

Liparis spp.

Fam. Orchidaceae

Ref. T.E. Hays 055, 154, 207, 228

Ndumba name: Kwaza'kwaza

Epiphytic orchids, found on mossy boulders or tree trunks in lower forest up to 2500 m. The flowers are used for personal ornamentation.

Lithocarpus cf. *rufo-villosus* (Markgr.) Rehd.

Fam. Fagaceae

Ref. T.E. Hays 468

Ndumba name: Mnenranra

A large tree, 20 m tall, found in stands in ridge forest at 2100 m. The timber is used for house posts, bridges, fences, and support poles. Edible grubs are sought under the bark beehives in holes, and the choicest mushrooms are said to grow commonly at its base.

Macaranga pleioneura A. ShawFam. Euphorbiaceae

Ref. T.E. Hays 399

Ndumba name: Dau'vora

A tree, up to 15 m tall, common in secondary forest along streams at 1800 m.

The timber is used for house posts, bridges, house ceiling poles, fencing, and support poles. More acculturated Ndumba also build bed frames with the timber.

Macaranga sp.Fam. Euphorbiaceae

Ref. T.E. Hays 454

Ndumba name: Popo

A small tree, up to 12 m, common in secondary forest along streams at 1900 m.

The timber is used for fencing, traps, and support poles.

Macaranga sp.Fam. Euphorbiaceae

Ref. T.E. Hays 513

Ndumba name: Taavuraa

A small tree, usually 10 m or less tall, common in secondary forest along streams at 1900 m.

The timber is used for fencing and support poles.

Maesa sp.Fam. Myrsinaceae

Ref. T.E. Hays 320

Ndumba name: Si'mroka

A small tree, up to 12 m tall, in old garden regrowth near hamlets. The timber is used for fencing and support poles.

Marattia sp.Fam. Marattiaceae

Ref. T.E. Hays 385

Ndumba name: Maa'nri'a

A fern, up to 2.5 m tall, growing in clumps in ridge forest at 2100 m. Women wear the fronds as ornamentation at festivals. During communal rodent hunts, women watch for this fern as its stripped fronds are said to be a sign that rats are nearby making their houses from the fronds.

Miscanthus floridulus (Labill.) Warb.Fam. Gramineae

Ref. T.E. Hays 112, 181

Ndumba name: Hosa

The dominant grass in garden fallows and also found along streams up to 2000 m.

Stems are woven (under European influence) into house walls, house floors, and sleeping mats. Bundles of dried stems are used for torches. Children eat a small worm commonly found inside the stems, and also feed the worms to pigs.

Mitrastemon yamamotoi Mak.Fam. Rafflesiaceae

Ref. T.E. Hays 298

Ndumba name: Faasa'tiri

A fleshy parasite, found above ground, but growing out of the roots of *Castanopsis*.

Hunters build hides in the branches of *Castanopsis* and watch for birds and other game that are said to drink water from *Mitrastemon*.

Mucuna albertsii F.v. Muell.Fam. Leguminosae

Ref. T.E. Hays 411

Ndumba name: Faa'rera

A vine common amidst cane grass or on branches of trees at lower elevations (1600 m).

The fruit is used by children as a ball or, nowadays, marbles.

Mussaenda ferruginea K. Sch.Fam. Rubiaceae

Ref. T.E. Hays 328

Ndumba name: Taambaam'bira

A shrub, 2 m tall, common along the roadside at 1800 m.

The bright yellow flowers are used for personal ornamentation.

Myristica womersleyi Sincl.Fam. Myristicaceae

Ref. T.E. Hays 388

Ndumba name: Haan'davi

A tall tree, up to 20 m, found in dense stands in ridge forest at 2100 m (not previously known to occur at such a high elevation).

The timber is used for bridges. The baseball-sized fruit, which has a very pungent odor, is obtained for the juice, which is rubbed on the entrances of traps to attract game. The bark is eaten as medicine for a variety of illnesses.

Nastus productus (Pilg.) Holtt.Fam. Gramineae

Ref. T.E. Hays 435

Ndumba name: Ropa

A very prickly wild bamboo, not uncommon in ridge forest at 2000 m.

It is flattened and woven into house walls and house floors, to start fires (as a fire-saw), and to make traps.

Oenanthe javanica DC.Fam. Umbelliferae

Ref. T.E. Hays 013, 261

Ndumba name: Nrondaapu

A herb, common amidst cane grass near hamlets; distinguished by Ndumba from cultivated varieties.

All eat the leaves, which are usually wrapped around pig intestines before cooking in bamboo tubes.

Omalanthus novoguineensis (Warb.) Laut. & K. Sch.Fam. EuphorbiaceaeRef. T.E. Hays 401 Ndumba name: Gaa'mmanra

A tree, up to 12 m tall, in secondary growth along streams at lower elevations (1800 m).
The timber may be used for fencing material.

Palmeria fengeriana PerkinsFam. MonimiaceaeRef. T.E. Hays 189 Ndumba name: Bau'era

A vine, entwined around various trees in undisturbed forest at 2300 m.
The leaves are obtained to wrap tobacco for smoking in bamboo pipes.

Pandanus julianettii MartelliFam. PandanaceaeRef. T.E. Hays 441 Ndumba name: To'sosa

A number of *Pandanus* spp. grow wild in the forests of Ndumba territory.
This tree grows to 8 m in ridge forest at 2100 m.
The leaves are used to build temporary shelters for hunters in the forest. The trunk may be used, after hollowing-out, to build a water-diverter to irrigate taro.

Parsonia curvisepala K. Sch.Fam. ApocynaceaeRef. T.E. Hays 197 Ndumba name: Nraammunra'vokara

A long vine (up to 4.5 m), entwined in various shrubs in undisturbed forest at 2300 m.
The stem is used for lashing material on houses and fences.

Parsonia cf. *wollastonii* (Wernh.) Mgf.Fam. ApocynaceaeRef. T.E. Hays 205 Ndumba name: Taaropa'sana

A vine, up to 6 m long, found along paths in undisturbed forest at 2400 m.
The stem is used for lashing material on houses, fences, and traps.

Peperomia sp.Fam. PiperaceaeRef. T.E. Hays 056, 501 Ndumba name: Ko've

A herb, commonly growing out of mossy stones on riverbanks at 1900 m.
Men eat the leaves and stems at initiation ceremonies.

Phaleria okapensis P.F. Stevens sp. nov.Fam. ThymeleaceaeRef. T.E. Hays 082, 282 Ndumba name: Tu'runduwana

A shrub, up to 2 m tall, inside fringe of disturbed lower forest at 1900-2100 m.
The leaves are used as medicine by heating them over a fire and inhaling the smoke. The flowers are used for personal ornamentation.

Phaseolus lunatus L.Fam. LeguminosaeRef. T.E. Hays 406 Ndumba name: Nerira

A vine, not uncommon amidst grass and cane in lower areas (1700 m).
The beans are avoided, since they are said to cause vomiting if eaten.

Phyllanthus flaviflorus (Laut. & K. Sch.) Airy ShawFam. EuphorbiaceaeRef. T.E. Hays 130 Ndumba name: Taa'vaaru

A small tree, 6 m tall, in disturbed primary forest at 2100 m.
The timber is used for house roof cross-slats and fencing.

Phyllocladus hypophyllus Hook. f.Fam. PodocarpaceaeRef. T.E. Hays 344 Ndumba name: Kehura

A tall shrub (4 m) in upper ridge forest at 2800 m.
The timber is used for bridges and traps. The purplish leaves are used for personal ornamentation.

Pilea sp.Fam. UrticaceaeRef. T.E. Hays 458 Ndumba name: Hi'nrunru

A small shrub, up to 1 m tall, common in secondary growth along stream-banks.
Women use the flowers for personal ornamentation.

Piper sp.Fam. PiperaceaeRef. T.E. Hays 390 Ndumba name: Kotu'vera

A vine, running along tree branches in ridge forest at 2200 m.
The flowers are used for personal ornamentation. (According to one consultant, the leaves may be eaten to get rid of sores).

Piper sp.Fam. PiperaceaeRef. T.E. Hays 431 Ndumba name: Taam'bira

A shrub, up to 3 m tall, at edge of ridge forest at 2000 m.
The leaves and flowers are used for personal ornamentation.

Pipturus argenteus (Forst. f.) Wedd. Fam. UrticaceaeRef. T.E. Hays 109 Ndumba name: Nraa'aamu

A small tree, 8 m tall, found along lower streambanks or in marshy *Casuarina* groves near hamlets.
The bark is used to make string.

Pittosporum pullifolium Burk.Fam. PittosporaceaeRef. T.E. Hays 211 Ndumba name: Hi'mminri

A shrub, 2.5 m tall, not uncommon in undisturbed forest at 2600 m.
Juice from the fruit is used to streak faces for ornamentation.

Pittosporum ramiflorum (Z. & M.) Zoll. ex Miq.Fam. PittosporaceaeRef. T.E. Hays 422 Ndumba name: Saaku'nra

A tall tree, up to 20 m, amidst cane grass on river banks at 1600 m. The timber may be used for house posts, bridges, and fencing material. Hunting hides are built in the branches for birds and game which are said to eat both the fruits and flowers.

Polygonum barbatum L. Fam. PolygonaceaeRef. T.E. Hays 233 Ndumba name: Mmunrummu'nrukara

A herb, growing out of mossy boulders on streambanks at 1900 m. The flowers are used for personal ornamentation.

Pueraria triloba (Lour.) Makino Fam. LeguminosaeRef. T.E. Hays 402 Ndumba name: Mmaahi

A vine (distinguished from the cultivated form), found in grassland at lower elevations (1800 m). The stem is used for lashing material on fences, house roofs, and fire-wood bundles. The inside of the tuber is said to be too "ropey" for eating.

Randia sp. Fam. RubiaceaeRef. T.E. Hays 461 Ndumba name: Fa'vaasa

A large tree, up to 16 m tall, in undisturbed ridge forest at 2100 m. The timber is used for digging sticks, housing material, and support poles.

Rhododendron beyerinckianum Koord. Fam. EricaceaeRef. T.E. Hays 493 Ndumba name: 'U'rau'a

A shrub, 3 m tall (rather tall for this species), growing on fringe of open grassy patch in high ridge forest (3300 m). Growing at too high an elevation to be useful as timber, the flowers are used by men coming back from hunting trips as personal ornamentation.

Rhododendron macgregoriae F.v.M. var. *macgregoriae*Fam. EricaceaeRef. T.E. Hays 067 Ndumba name: Hin'deri

A small shrub, usually 1 m tall, growing abundantly in clumps in secondary vegetation near hamlets. The flowers are used for personal ornamentation.

Rhododendron multinervium Sleum. Fam. EricaceaeRef. T.E. Hays 024 Ndumba name: Nron'nrra

A shrub, 2 m tall, amidst dense cane grass on riverbanks at 1900 m. The flowers are used for personal ornamentation.

Rhododendron stevensianum Sleum Fam. EricaceaeRef. T.E. Hays 208 Ndumba name: 'U'rau'a

A small shrub, up to 1 m tall, in undisturbed primary forest at 2500 m. The flowers are used for personal ornamentation.

Rhus taitensis Guill. Fam. AnacardiaceaeRef. T.E. Hays 506 Ndumba name: Ho'ru

A shrub up to 3 m tall, along streambanks at 1900 m. The timber may be used for fencing material and small bridges.

Riedelia monticola Val. Fam. ZingiberaceaeRef. T.E. Hays 091 Ndumba name: Ki'ringga

A wild ginger, to 2 m tall, tending to grow singly in undisturbed primary forest at 2200 m. The flowers are used for personal ornamentation.

Riedelia spp. Fam. Zingiberaceae

Ref. T.E. Hays 023, 087, 088, 283, 284, 339, 346, 356

Ndumba name: Faa'nresa

A number of varieties of this wild ginger grow in Ndumba forests, and several kinds are distinguished by them. They are abundant from lower riverbanks at 1900 m to undisturbed ridge forest at 2800 m. The flowers of all types are favored for personal ornamentation at festivals.

Rubus ledermannii Focke (ATYPICAL)*Rubus moluccanus* L. var. *dendrocharis* (Focke) R. RoyenFam. Rosaceae

Ref. T.E. Hays 191 (mixed inadvertently)

Rubus rosaefolius Sm. Fam. Rosaceae

Ref. T.E. Hays 012, 046, 073

Rubus sp. Fam. Rosaceae

Ref. T.E. Hays 049, 064

Ndumba name: 'Unera

A herb, very common in clumps throughout grassland, secondary vegetation near hamlets, and in disturbed lower forests. Ndumba distinguish several varieties, the fruits of all of which are eaten (mainly by children).

Rungia sp.Fam. Acanthaceae

Ref. T.E. Hays 420

Ndumba name: Honri

A herb, distinguished by Nduma from the cultivated *Rungia klossii*, found amidst cane grass on lower riverbanks. The leaves are eaten by all.

Schnauromansia henningsii K. Sch.Fam. OchnaceaeRef. T.E. Hays 161, 187, 299 Ndumba name: Haaru'vesora

A tree, up to 20 m tall, common along streams in secondary growth near hamlets or in disturbed forest up to 2200 m. The timber is used for digging sticks and support poles.

Scirpus ternatensis Reinw, ex. Miq.Fam. Cyperaceae

Ref. T.E. Hays 516

Ndumba name: Huvu'huvu

A sedge, common in grass along streambanks at lower elevations. The rough-edged leaves are used in nose-bleeding rituals at male initiations and for women's first menstruation.

Scleropyrum aurantiacum (Laut. & K. Sch.) Pilg.Fam. Icacinales

Ref. T.E. Hays 389

Ndumba name: Nremmi

A small tree, 6 m tall, found in disturbed ridge forest at 2200 m. In addition to using the tree for firewood, all eat the nut found inside the red fruit.

Solanum nigrum L.Fam. Solanaceae

Ref. T.E. Hays 090

Ndumba name: Fesa

A herb, growing in clumps in disturbed forest at 2100 m. All eat the leaves and stems.

Spathoglottis grandiflora Schltr.Fam. Orchidaceae

Ref. T.E. Hays 256

Ndumba name: Waam'buri

A terrestrial orchid, tending to grow singly (up to 1 m tall) in grassland or amidst cane grass in secondary growth near hamlets. The flowers are used for personal ornamentation.

Stephania grandiflora FormanFam. Menispermaceae

Ref. T.E. Hays 442

Ndumba name: Hi'nraana

A vine, hanging to the ground from tree branches up to 18 m high, in disturbed ridge forest at 2000 m. The stem is favored for arrow bindings.

Symbegonia sp.Fam. Begoniaceae

Ref. T.E. Hays 004

Ndumba name: Naam'bufua'raara

This herb, growing out of mossy boulders on streambanks, is grouped by Ndumba with the nearly identical *Begonia* spp. (see above) and used in the same ways.

Syzygium sp.Fam. Myrtaceae

Ref. T.E. Hays 514

Ndumba name: Himbu'hiri

A large shrub, up to 4 m tall, growing along streams in secondary growth near hamlets. The timber may be used for fencing material and support poles.

Thelymitra papuana J.J. Sm.Fam. Orchidaceae

Ref. T.E. Hays 305

Ndumba name: Taana'popi

A terrestrial orchid, up to 1 m tall, growing amidst cane grass in secondary growth near hamlets. The flowers are used for personal ornamentation, and one consultant reported that the rhizome is eaten.

Themeda intermedia (Hack.) JansenFam. Gramineae

Ref. T.E. Hays 317

Ndumba name: Taura

The dominant grass, up to 4 m tall, in many old garden areas near hamlets. The stem is used as a center-piece for pig tusk nose ornaments. Otherwise, it is considered the major obstacle to be cleared in replanting old garden areas.

Timonius trichanthus M. & P.Fam. Rubiaceae

Ref. T.E. Hays 269

Timonius trichocladus M. & P.Fam. Rubiaceae

Ref. T.E. Hays 363

Ndumba name: Hondai

Both are trees, 7-8 m tall, common in secondary growth and along streams near hamlets. The timber is used for support poles.

Trachymene adenodes Buw.

Fam. Umbelliferae

Ref. T.E. Hays 042, 123, 486 Ndumba name: So'mi

A common herb, tending to grow in clumps, found from streambank vegetation at 2100 m, through undisturbed forest at 2500 m, to the summit of Mt. Piora at 3400 m. The leaves and flowers are favored for their good smell as personal ornamentation at festivals.

Triumfetta nigricans F.M. Bail.

Fam. Tiliaceae

Ref. T.E. Hays 151 Ndumba name: Da'taa'tara

A shrub, common in secondary growth along streams and near hamlets. The burrs are used to make an ornamental headdress.

Urophyllum sp.

Fam. Rubiaceae

Ref. T.E. Hays 333 Ndumba name: Paasa'sora

A small tree (8-9 m) of the undisturbed ridge forest at 2200 m. The timber is used for digging sticks.

Vaccinium albicans Sleum.

Fam. Ericaceae

Ref. T.E. Hays 508

Vaccinium striicaule Sleum.

Fam. Ericaceae

Ref. T.E. Hays 069, 494

Vaccinium sp.

Fam. Ericaceae

Ref. T.E. Hays 307, 391 Ndumba name: Kaam'bi

Several species occur in Ndumba territory, and Ndumba distinguish a number of types. These shrubs, from 2.5-3.5 m tall, are found in secondary growth along lower streambanks, in open grassland and secondary growth near hamlets, in undisturbed ridge forest at 2200 m, and near the Mt. Piora summit at 3200 m. The timber is used for fencing material, bridges, housing material, and support poles. Suitable branches are cut for the blunt heads of birds arrows.

Wendlandia paniculata Bl.

Fam. Rubiaceae

Ref. T.E. Hays 150 Ndumba name: Nrongge

A small tree, 7-8 m tall, found in streambank secondary growth near hamlets. The soft timber is used for fencing material and support poles.

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